

THE PSYCHOLOGICAL BULLETIN

GENERAL REVIEWS AND SUMMARIES

HISTORICAL CONTRIBUTIONS

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The work of the year illuminates the statement of Chiappelli that the object of philosophy is not a stable entity but a progressive synthesis, a vast integration of the sciences, from the numbers of the Pythagoreans to the élan vital of Bergson (5). Thus Alexander describes Plato's cosmological speculations from the humanistic point of view, and points out the importance of the Platonic tradition in the idea of an orderly and comprehensive system of the universe (1), while Robin shows that besides the teleological physics of Plato there is a mechanical side, even the Demiurge, as servant of the elements, coming under mechanical causation (17). So, too, Aristotle's "other logic" contains not only the characteristics of the traditional system, but also those further meanings which have been introduced into the science under the "new logic" (19). And the same holds true of the Middle Ages, the philosophical programme of the University of Paris being closely affiliated with a classification of human knowledge which was accepted by all the scholars of the thirteenth century, its sociological value lying in its satisfaction of the international aspirations of the times for one science, one system and one religious faith (6).

In modern philosophy, likewise, the theoretical and the applied are to be found conjoined in those speculations of Descartes connected with such varied subjects as optics, colors, the circulation of the blood, the refraction of light, and the weight of the air (13). Even the idealistic Berkeley perceived that most of the traditional

Euclidean geometry must be rejected, and in examining the logical basis of mathematics brought about an eventual establishment of a method of limits akin to that of Newton (8). In France, also, it is contended that Destutt de Tracy's ideology was based on a sound economic science of the happiness of society, and that his abstract logic gave way to a clinical method of observation (9). So much for European philosophy. A French comparative study shows that the logic of India and China, like that of the West, begins as a sophistic and ends as a scholastic, but that while Plato, for example, hypostatizes, the Orient gives no ontological value to its logical concepts, considering such to be merely so many states of mind (10). The same author reviews recent studies in Islamic and Jewish mysticism, in Buddhistic psychology with its subtleties and crudities, in Hindu realism, neglected because of the better known Buddhistic idealism, and in early Chinese philosophy, similarly little known because of the intervening Confucianism (11).

As to work by American authors we have a number of contributions indicating a rapprochement with French thought such as Marvin's scholarly history of European Philosophy (12), a translation of Flournoy's brilliant treatise on William James, emphasizing his rejection of monism and his advocacy of pragmatism and "tychisme," (7) the latter akin to Boutroux's contingency. Reciprocally, Schinz investigates the French origins of American transcendentalism (18), Riley contrasts this with the German transcendentalism (15), and also traces other French influences from Voltaire to Cousin (16).

Coming to the war Yerkes contrasts the lack of practical applications of psychology in Europe with the remarkable work done by the American Psychological Association in our army training camps, from segregating the incompetent to classifying recruits according to their mental capacity, and assisting in the selection of competent men for responsible positions, such as gun layers, air pilots, and officers (20). This is positive; from the negative side the New York Psychiatrial Society observes with distrust the growing tendency of some untrained psychologists to deal with the problems of diagnosis, social management, and institutional disposal of persons suffering from abnormal mental conditions and deplures tests carried on in schools, courts and correctional institutions and so-called psychological clinics quite independently of competent medically trained workers (2). As to Freudianism Putnam asks what justification there was for the defection of Adler and Jung from

Freud, and answers that Freud's strong accentuation of the sex motive prevented him from adequately filling the position of a judicial student of human motives as a whole (14). Burrow, on the other hand, contends that these two critics have contributed, more than any others, to check the necessarily difficult progress of the Freudian tide, largely because of the rigid scientific formulation of Freud with respect to the sexual libido (4). An exaggerated case in point may be found in Blanchard's psycho-analytic study of Auguste Comte, which puts Comte's own account of his "crises" in the Freudian jargon, and attempts to show a discrepancy between the early Positivism and the later Religion of Humanity (3).

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GENERAL STANDPOINTS: MIND AND BODY

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The American Philosophical Association selected Mechanism versus Vitalism as the subject for an organized discussion to be held at its meeting last December. Five leaders of this discussion were appointed and these leaders held a preliminary conference last June, after which they published "A Basis of Reference" and abstracts of their papers (13). This Basis of Reference attempts to present "an objective statement of the present condition of science bearing on the problem of mechanism and vitalism." The five papers were published later. Henderson (11) points out that there are two antimechanistic theories now in the field: Haldane's theory and vitalism, such as that of Driesch. Against Driesch Henderson maintains that his argument against mechanism is not of the character of scientific proof. Driesch talks too confidently about things that no one of us as yet understands. Against Haldane's view that biology is concerned with organization and not with physicochemical phenomena Henderson maintains that organization is not merely biological and that the fact of organization is not sufficient to overthrow the mechanistic hypothesis. Jennings (14) finds three classes of vitalistic theories. The first questions the adequacy of experimental formulation for the phenomena of life. "The second, accepting such formulation, maintains that when applied to the living it yields elements and laws diverse from those reached by the study of the non-living. The third class holds that life reveals the characteristics of the universe more directly than does the non-living, so that biology is more fundamental than physics." The first class of vitalistic theories is liable to lead to experimental indeterminism, in other words, to a belief in the failure of the experimental method in biology. As to the second class, biological science can do little at present either to refute or to establish such theories. The third class of theories is consistent with experimental biology but lies in a field of discourse outside that science. Warren (20) finds the argument against mechanism based chiefly upon four lines: (a) Inconceivability of mechanistic explanation; (b) Organization cannot be explained mechanistically; (c) Voluntary selection or choice in human beings is non-mechanistic; (d) Teleology, or "the adaptive

character of behavior is not fully describable in mechanistic terms." Besides pointing out the fallacies in the first two arguments Warren shows that psychology is today explaining voluntary selection and teleological behavior mechanistically. Marvin (16) finds the issue between mechanism and vitalism not merely scientific but religious. Vitalism is distinctly allied with romanticism and its reactionary religion; whereas mechanism is allied with the religion of progress, optimism, and enlightenment. Hoernlé (12) supports the thesis: "Not mechanism *or* vitalism, but mechanism *and* teleology." Biology has to concern itself "about the larger questions of the origin and status of life in the system of nature as a whole." Mechanism and teleology are not contradictory but cumulative; and teleology is *logically dominant* over mechanism in biology. Freed of vitalistic implications we need teleological concepts, "concepts so general that conscious designs or desires are but a special type falling under them."

A similar symposium was held by the Aristotelian Society. Haldane (10) points out that physical categories practically sufficient as short cuts in physics are insufficient practically in biology. Hence in biology we must use special biological conceptions, "the relation of which to the physical conceptions must for the present remain more or less obscure for lack of data." Similarly biological conceptions are insufficient practically in psychology. Thompson (10) states his position thus: the material body of a living being (apart from consciousness) is a mechanism. It cannot be studied except with the help of physical and chemical methods. "It is a part of a physical system; I study it, as well as its environment, according to the working hypotheses, or categories, of physical science, with all my might and without either hesitation or fear. It is its physical or material phenomena, admittedly, that I am studying. What more, outside of psychology and outside of metaphysics, can I do?" Mitchell (10) believes that though life and mind cannot with our present knowledge be explained in terms of physics yet the trend of science is ever toward synthesis. At present this trend toward synthesis is moving away from the mechanical and is approaching rather than receding from psychology. Hobhouse (10) finds the organic in a general sense purposive, purposive and mechanical being fundamentally distinct categories. "The mechanical view must break with evolution and postulate a detailed predestination." Predestination (determination by an exterior purpose) seems the only alternative to the admission of determination by internal purpose.

The problem of vitalism versus mechanism is discussed also by Mourgue (17). He points out that physical science itself is not a closed system with fixed premises but that the physicist adapts his postulates and resulting theory to the special problem he is trying to solve going even so far as to admit principles quite contradictory to classical physics. Hence it is irrelevant to maintain that a certain physical theory fails to explain a given biological fact. Some biological facts we know to be explicable by certain physical theories. Other biological facts may call for quite novel physical assumptions. The two important points are first not to let vitalism be the name of a dogmatism and second to see in physics an experimental method rather than a fixed doctrine with fixed postulates.

Behaviorism also continues to be a prominent subject of discussion. De Laguna (8) in a study of Washburn's *The Animal Mind* finds a far less radical difference than is usually supposed to obtain between the treatment of problems as set by the dualist and the treatment of these problems as set by the behaviorist. "What the dualist does in effect is to add on an interpretation which can only be characterized justly as 'metaphysical.'" On the other hand the behaviorist can find "a place for much of the empirical procedure which is labelled introspection" and this without becoming a dualist. Bawden (1) writes on the presuppositions of behaviorist psychology. Mind is behavior of a certain sort. "It is behavior in which certain objects which serve as excitants are undergoing experimental reconstruction into stimuli adequate to the incipient response." Mind is thus not a faculty over and above the mechanism of behavior. It stands for certain observed uniformities, which psychology as a science attempts to describe and explain. Bode (3, 2) argues to much the same result. Consciousness is "a name for the control of conduct by future results or consequences." It is essentially experimental; for "all experience is a kind of intelligence, a control of present behavior with reference to future adjustment." "The relatively unorganized responses of the present moment, in becoming reflected in the experienced object, reveal their outcome or meaning before they become overt, and thus provide the conditions of intelligent action." It is "this behavior that is the peculiar subject-matter of psychology." Behaviorism is not to be confused with neurology or biochemistry. It is the study of certain facts in relation to other facts, viz., "the ends that are achieved through conscious behavior." It is when we ignore this relation that "consciousness is able to maintain

itself in a state of metaphysical isolation" as in the traditional psychology Marshall (15) finds in Watson's behaviorism an abandoning of psychology altogether and a discarding of the concept of consciousness. As to Bode's belief that consciousness is a particular kind of adaptation, "this is as though, having found that a definite form of crystal refracts light in a certain way, one should say that this particular kind of refraction is the definite form of the crystal." Dewey (9) protests that "there is no more reason for supposing that personal events have a nature or meaning which is one with their happening, and hence open to immediate infallible inspection, than is the case with impersonal events." They too set as a task, the discovery of their connections. Robinson (18) after examining the behaviorism especially of Watson and of Holt concludes that behaviorism cannot explain recognition, memory, or response to a foreseen situation. "Psychology is the science of the conscious organism *qua* conscious." "Behavior is not the characteristic, still less the sole, category of psychology."

Finally, the mind-body problem also continues to be a frequent topic of discussion. As pertinent to the present issues Dashiell (6) endeavors "to trace back the distinction of mind and body to its manifold roots—roots in unreflective as well as reflective manners of thinking, primitive as well as sophisticated." Broad (4) defends interactionism. The mind in acting on the body probably does not alter the total energy but is merely directive and selective. In the case of voluntary action the mind probably directs by modifying the resistance of certain synapses. To regard the body as merely a physicochemical system assumes that it would behave as it now does if no mind were connected with it. Carr (5) maintains that interaction is not theory but fact. Mind and body are individual organizations and complement and coöperate with one another. They interact as whole with whole. They represent two antithetical principles, freedom and necessity, and as such are essential to the process of living action. Sellars (19) offers the following answer to the question: What is the probable function of consciousness? "The cerebral processes involved in choice are processes of internal adjustment within a system in the making." The function of consciousness is "to aid in the bringing together of the parts into a new integration by the cues it affords. Literally, it assists the brain to solve problems." "Of this process of integration, the only part open to inspection is, of course, consciousness itself." De Laguna (7) finds the solution of the mind-body prob-

lem in the fact that the central nervous system is not primarily a physiological organ. Its primary function is to adjust behavior to environment. It is this function that constitutes the correlate of feeling and thought.

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CONSCIOUSNESS AND THE UNCONSCIOUS

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The opinions of the professional psychologists on the topic of consciousness and mind seem to have shaken down to a degree of uniformity that does not call out lengthy discussions. Contributions are mainly directed toward an analysis and criticism of behavioristic and psychoanalytic conceptions of consciousness and its derivatives. Calkins (4) is disposed to attribute the force of Holt's teaching to implicit references to the "frustrated or confiding child; to the truthful or untruthful parent," regarded as *purposing selves* in social relation, rather than as higher organisms of *integrated reflexes*. Bawden (1) in discussing the natural-science conception of mind, calls attention to the fact that no matter how profound may be the transformation through which our ideas of subjective experience may pass, scientific method will not deny a place in the system of the universe to the *facts* represented by it. The distinguishing marks of the mental he regards as: The capacity of an organism to use one part of its experience to control another and especially the capacity to control experience by the use of language symbols; the social-individual amplification of experience. Mind, he concludes, is not an organ or function or faculty over and above the mechanism of behavior. Like gravitation or evolution, it is merely a generalization from certain facts—the statement of a type of relationship. Explaining wish-fulfillment from the standpoint of behavior, Watson (12) points out that in the development of habits there is always conflict. We cannot become both saint and millionaire at the same time, and those tendencies to action that are thwarted lead to more or less maladjustment which is exhibited whenever our higher and well-developed habits of speech and action are dormant, as in sleep, in emotional disturbances, etc. Where the maladjustments approach a pathological condition, psychoanalysis may reveal their nature so that the physician can assist the patient to form new sets of habits which do not conflict. After differentiating four factors in the art of mental healing, Rahn (10) contributes directly to the reviewer's topic by ascribing to the *libido* of the psychoanalysts a function similar to that of the *Aufgabe* or preliminary instructions in an experiment in normal psychology. The concept of the libido whatever its scientific status, he regards

as of high pragmatic value in teaching the patient "to know the good and how to do it." Woodworth (14) holds that the tendency toward fixed symbolism in dream interpretation is of little value in scientific psychology, whatever may be its value in abridging the labor of psychoanalysis. Continuing his scrutiny of other Freudian concepts such as the libido, suppression, complexes, the censor, he concludes that if we eliminate the exaggerations, the spectacular applications that are the exception rather than the rule, the implication of psychical determinism, we find only such phenomena as are amenable to regular psychological explanation.

Prince and Haeblerlin independently report that an attempt to analyze the individual peculiarities of action in the carrying out of a post-hypnotic suggestion, reveals very few ideational components. The subject merely "feels" he must do it. Under subsequent hypnosis, however, a wealth of ideational elements are reported as having been *subconsciously* present at the time the act was performed. Prince (9) regards this as indirectly demonstrating that subconscious processes exist and proposes the name *coconscious* to distinguish them from those mental processes actually present during the action. He further concludes that these coconscious images may actually emerge into consciousness, masked as hallucinations, symbolisms, dreams, somatic phenomena. By the aid of an interesting diagram he shows how coconscious images may be related to other mental processes. Haeblerlin (6) who believes that psychology must understand the unconscious out of the conscious, uses the example to illustrate how the transition from the conscious to the unconscious may take place. The "feel" he regards as an affective tone which under normal conditions is amplified by ideational components of the experience represented. There are however affective tones that are not so amplified yet which refer back to some specific experience in exactly the same way. To such unamplifiable affective tones Haeblerlin proposes to restrict the term *unconscious*. A more rigorous definition seems necessary, he thinks, because of the many shades of meaning that are being developed as the term unconscious is being introduced into anthropology, sociology and cultural history. Brink (2) considers the unconscious as merely a working concept to express that the mental life is a genetic and dynamic unity of which only a small part appears to *conscious* cognizance and thought. The concept of the unconscious implies for him the survival of a vitally affective past, created from past psychic experiences which now

influence the present and thus make the past accessible to scientific observation. Ultimate causes and explanations must include not only the individual span of experience but also the various grades of human culture represented by anthropology, mythology, religion and linguistics.

Insofar as a general tendency can be detected among psychoanalysts themselves, this is in the direction of an historical and anthropological analysis of psychoanalytic symbols. Burrow (3) examines the incest-awe and traces its origin to the subjective reaction resulting from an affront to an inherent psychological principle of unity. White (13) commenting on the Adlerian concept which holds that the fundamental psychological element in the neurosis is the feeling of inferiority, which feeling in every case founds in an inferior organ, regards this conception as a broad formulation of great scientific and philosophic value, constantly reminding us that the capacity for psychological readjustment may be much assisted by organ analysis. To make the concept more practical and of greater therapeutic value however, its interpretation along more strictly Freudian lines is held to be necessary. Jelliffe and Brink (7) compare some of the dreams of animals reported by their patients with the fables in the *Metamorphoses* of Ovid and with earlier religious practices in which animals played a part. They find striking resemblances and conclude that animals are used, first as objects of the libido and later as libido symbols, especially for repressed incest feelings toward the parents. Animals lend themselves well for unconscious elaboration because they represent the lower forms of man's nature. Rank and Sachs (11) maintain that the origin and development of civilized life cannot be completely understood when the study is restricted only to conscious factors. It is regarded as equally important to include the psychology of the unconscious. Following a chapter on the "Unconscious and its Forms of Expression" are six chapters devoted to illustrating the significance of psychoanalytic methods in (1) myth and legends, (2) theory of religion, (3) ethnology and linguistics, (4) æsthetics and psychology of art, (5) philosophy, ethics and law, (6) pedagogy and characterology. Lay (8) has written a popular exposition of psychoanalysis which should prove interesting and instructive to the class of readers for whom it is intended. In an article showing the influence of psychoanalytic principles on sociological problems, Groves (5) gives quotations from other writers which he believes support the conclusion that Freud has established a causal category

in the science of mind that will be of greater value to sociologists in the understanding of human conduct than the parallelistic relationship between mind and body held by some psychologists.

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Poffenberger (10) has devised a scheme of classification for psychology according to the Dewey decimal system, based upon the plan used in the Psychological Index. The Dewey scheme was devised before the new movement in psychology was fairly started and presents numerous defects from the present-day standpoint. The Index plan was not found practicable for general library use owing to its detailed subdivisions. The new scheme has been adopted in the Columbia Library and is reported to be satisfactory.

A brief list of books and articles by army officers on the psychology of war, leadership, and kindred topics is given in the preliminary report on S. A. T. C. courses (12). The literature on these topics is very limited at present for obvious reasons. It may be expected to take a decided leap before our next report.

The literature on "mental tests" continues to pour forth in steady volume and a bibliography of the topic is much needed. Mitchell and Ruger (8) give 1,428 titles covering the entire field, with brief notes on each title. It is the most complete list to date. Kohs (6) gives 457 titles (also annotated) for the years 1913-17; the work is not confined to the Binet tests exclusively. Crafts includes a number of titles of mental tests in his bibliography on juvenile delinquency (5). This and the companion list (3) give a bird's-eye view of recent progress in scientific criminology. Most of the references are repeated in Crafts's larger bibliography (4), which contains 956 well-chosen titles. Otis's lists (9) are more recent and do not duplicate Crafts's work.

A bibliography of Josiah Royce's writings was noticed in our last report. Loewenberg (7) supplements this with a list of Royce's unpublished lectures and other papers. Among other psychological material is the course of public lectures delivered at Harvard in 1893 on "Topics in Psychology of Interest to Teachers." It is to be hoped that these are in sufficiently complete form to justify publication. The bibliography of C. S. Peirce's writings (2) contains several papers of psychological interest.

The Psychological Index (1, 11) has continued to appear during the war period, despite numerous difficulties. The number of foreign titles is somewhat less than usual, owing to the suspension of psychological activity in the countries most vitally affected by the war; but the production in America does not appear to have diminished up to the close of 1917.

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APPARATUS

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The problem of chronoscopes is still unsolved. The whole matter should be surveyed by a committee of the American Psychological Association for the purpose of determining the relative merits of existing instruments for the guidance of those who are equipping new laboratories. Klopsteg (4), Claparède (1), and Warren and Reeves (9) report modifications of the Hipp chronoscope; but the most suggestive contribution is that of Dunlap's (2) account of the "Johns Hopkins Chronoscope" which is essentially a synchronous motor with magnetic release and stop of the pointer.

McComas (6) has designed a rather complicated serial action apparatus in which four colored light stimuli are associated with four reaction keys, and a graphic time record is made of the responses in a continuous chain of reactions. Richmond (8) has pointed out a series of errors in the ordinary reaction key, and recommends that it be suspended in the air clasped by thumb and finger, reaction being made by the withdrawal of the thumb. Kohs (5) has made a careful analysis of a series of errors in the Smedley dynamometer and finds them very serious, even as much as fifteen pounds. He thinks that the dynamometer can be used if each instrument is standardized by itself.

Goddard (3) reports on the successful use of the very simple

tilting board and rotation table which is made by suspending ropes from the ceiling. G. R. Wells (12) describes a modification of the mirror writing apparatus by which deviation from the star which is to be drawn is registered by the electrical contact device. The instrument, however, seems to be of doubtful value, as it does not give detail in the record and is much more complicated than the ordinary apparatus.

Weiss (11) has given us what seems to be a very serviceable exposure apparatus in which the degree of focus, size, and illumination, and time of exposure are under control. It seems to be admirably adapted for a large range of experiments in which such full control of stimuli is needed. Weiss has also described (10) what seems to be a very satisfactory construction of the limen color mixer, in which the essential factors are under control.

A valuable contribution toward the reviewing of available color filters—the neutral filters—is given by Reeves (7) working with the Eastman Kodak Co.

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TEXTBOOKS AND GENERAL TREATISES

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Angell's *Introduction to Psychology* (1) cannot be considered a revised edition of his older textbook. Although the arrangement of the book is similar and the cuts are taken from the earlier book, there is an entirely new presentation of the subject matter. The author still holds to a structure-function distinction, but considers that such a position is too well-established to require any further justification. He has accepted from the behaviorists certain doctrines which he considers sound, but he has not been persuaded by their arguments to discard the data from introspection.

One influence of this movement which the reader will observe is the less frequent use of the term "consciousness"; another is a more explicit mention throughout the book of the adjustment of the organism to its environment. The influence of unconscious factors is also more strongly emphasized than formerly, although the principles of subconscious activity, especially attributed to Freud, are not included. The author also states more clearly his position in regard to imageless thought. Throughout the book he is wholeheartedly conservative and unbiased, with the desire to give full weight to those doctrines which have withstood the test of thorough investigation, and with a reluctance to accept theories which are chiefly characterized by their popularity.

The book is scarcely half the size of the old one. The same field has been covered, but the chapters have been very much condensed, only the most essential facts for a very general conception of psychology being given. It might be considered a skeleton of the former book. It is a good book for the layman who desires a knowledge of psychology, and for preparatory schools, but does not contain sufficient material to be used as the only textbook in a college course. It is written in the author's clear style, which makes it well adapted to the immature mind.

The book starts with the usual introduction on the methods and subject matter of psychology, and the various fields covered by the science. A short chapter follows on the various forms of behavior, both inherited and acquired, together with a description of the transition from conscious to automatic action, and several pages upon instincts. This chapter is presumably inserted here in order

to give the "functional set" to the reader's mind. Between the chapters on the "Nervous System" and "Sensation" are a few pages upon the formation of habit with special reference to movements and the rôle of consciousness, and a chapter upon "Attention," which further describes the process of adjustment of the organism, particular stress being placed upon the motor aspect of attention in analysis and synthesis. Under "Sense Perception," we have the usual treatment of space, time, and optical illusions. There is a short chapter on "Memory," which gives the main features and conditions, together with some of the abnormalities, of that process. Under "Imagination" one finds an explanation of the image, and the association of ideas. Under "Reasoning" is described the thought process, which concludes with a section explaining the disparity between human and animal intelligence. After explaining the variety of simple and complex feelings, attention is given to the relation of feeling and behavior. The James-Lange theory and Darwin's genetic view of emotions occupies most of the next chapter. After a few pages on instincts and their origin, there follow a few pages upon voluntary action, which includes facts of motor learning based upon the misleading results of Bryan and Harter. The book concludes with three short chapters on "Will, Instinct, and Character"; "Sleep, Dreams, Hypnotism, and Multiple Personality"; and "The Self."

Under the title *Dynamic Psychology* (10) are collected eight Jessup lectures for 1916-1917, given by R. S. Woodworth. There is a general plan to the book which unifies the various chapters into a short introduction to psychology, from the author's particular point of view, and polemic in style. A brief description of the contents will probably best explain the nature of this approach.

There is a short sketch of the development of modern psychology, followed by a chapter upon the problems and methods of psychology. Part of this latter chapter is taken up with a discussion of the merits and faults of introspective and behavior psychology. The dynamic view, according to the author, must utilize the data from both methods and that of brain physiology as well. According to this psychology, there are two problems—the one of "mechanism," and the other of "drive." These are the "how" and the "why" of mental activity, and it is the author's purpose throughout the rest of the book to answer these questions. In so doing, he draws from the various facts of conduct, both human and animal and of society. The distinction between "drive" and "mechan-

ism" is not an essential one in that a mechanism can become a drive. That is, the satisfaction derived from the fulfillment of an act can in itself become incentive and drive for sustained or future action, independent of any external motive. This is extensively illustrated and especially emphasized in the following chapters, as for example, in the next lecture on the "Native Equipment of Man" which deals principally with the instincts and takes exception to McDougall, who the author says would classify such native capacities as described in the chapter as intellectual processes rather than instincts; that is as mechanisms requiring drive. In disagreement with this position, "The great aim of the book is . . . to attempt to show that any mechanism—except perhaps some of the rudimentary that give the simple reflexes—once it is aroused, is capable of furnishing its own drive, and also of lending drive to other connected mechanisms." In dealing with "Acquired or Learned Equipment," particular attention is given to the conditioned reflex, and an extensive quotation from Locke is included to show that this form of adaptation is not an entirely modern concept. The author also considers the method of learning by trial and error, and by the use of the mechanism of skilled action. The results of Bryan and Harter with their "higher unit mechanisms," unfortunately form the basis of discussion here, as they do also in Angell's book. Under "The Factor of Selection and Control" is found the discussion of inhibition and facilitation of impulses, and of the selective agency or "mental set." In this context, the "drive becomes both a stimulus to activity" and the cause of selection. The discussion of the "Factor of Originality" begins with a description of the genius, and then turns to the originality of the ordinary man. Attention is called to experiments in the solving of problems. The two factors which inspire originality are the inner need of the individual and the obstruction to its fulfillment. The four qualifications for a good thinker are: (1) experience; (2) keen observation and sagacity; (3) flexibility; and (4) control.

In the lecture on "Abnormal Behavior," the author again applies his concept of "drive," which he believes to be behind abnormal reactions, although he admits that in the feeble-minded there is absence of both drive and mechanism. Further, he shows how the method of trial and error, and of substitution are employed by the abnormal mind. There is also included a criticism of Freud, which leads to the discussion of the sex impulses. The author

takes pains to show that this is not the only impulse in the complex emotion of love. The last chapter is entitled "Drive and Mechanism in Social Behavior." Here is reviewed the theories of motive, domination, submission, etc. The main contention is that there is a social motive drive just as there is a musical or mathematical motive. Man is interested in the social attitude as such.

Swift's *Psychology and the Day's Work* (9) is a collection of essays for the general reader with the efficient adaptation of the human organism to the varying conditions of the environment as the keynote. The text is profuse with illustrations drawn from the author's experience, from the biographies of great men, and from the general literature. In the opening chapter on "Mental Efficiency," the author gives many examples of both intelligent and unintelligent adaptation of men and animals. In the chapter on "Thinking and Acting," there are illustrations of correct thinking and various forms of arriving at conclusions and beliefs, and the process of productive imagination. In "Habit in Preparation for Efficiency," the advantages and disadvantages of habit of thought and action are shown. Several chapters are devoted to the results of well-known experiments on learning and fatigue. "Curiosities of Memory" is concerned chiefly with forgotten memories, and the various methods of recall by crystal-gazing, hypnotism, etc. This is followed by practical hints on the improvement of memory, based upon the results of classical experiments. In "Psychology of Testimony and Rumor," many of the vagaries of memory and the influence of suggestion are described. In "Our Varying Selves," the author shows that the normal mind is a complex of multiple personalities. The last chapter is upon "The Psychology of Digestion."

In *The Language of Color*, Luckiesh (5) has attempted to explain in a popular manner the numerous facts concerned with the color sensation, with special attention to the place of color experience in our total mental equipment. He has sketched the subject with bold strokes, devoting only a few pages to each of the many subjects treated. The book thus becomes a collection of suggestions rather than a handbook. He tells of the use of color names in mythology, effect of association in the use of such terms, and the use of color in the description of nature and its moods. There are also chapters upon the philological aspect of color names, and the references to color in literature. There are short descriptions of the place of color in painting, in the church, and in the theater. The second

part of the book is concerned with the symbolic value of the various colors, each color being treated separately, and examples being given from the various poets. The third part of the book deals chiefly with the psychophysiology of color, color preference, and the emotional and attentive value of color. The æsthetic value of color forms the subject matter of the fourth part of the book. Here we find the results of psychological experiments upon the effect of various distributions of color and a description of the harmonious relations of color. There are also chapters upon the use of color, and upon chromesthesia.

In Hocking's book, *Human Nature and Its Remaking* (2), there are sections, especially those upon instincts, which are of value to the psychologist. After describing the nature of instincts and pointing out that an instinct is a part of consciousness and therefore material for re-making, he discusses the number of instincts in the original nature of man. There are three reasons why some investigators have failed to find original instincts: (1) many instincts are balanced by their opposites; (2) the nervous arc—stimulus, central adjustment, muscular response—is not always clear; for instance, several instincts may have the same stimulus; (3) the same satisfaction is shared by several instincts; for example, a successful wooing may offer satisfaction not only to the mating instinct, but to the instinct of acquisition (if there is such). An interesting table of instincts is given. They are classified as positive (expansion) and negative (contraction), the latter being subdivided into aggressive and offensive. Curiosity, play, pugnacity, and fear are instincts of the second order. Classifications of instincts according to James, McDougall, and Thorndike are also given with an explanation of their general scheme. Thorndike in his attempt to apply consistently his plan of stimulus-response, becomes a "splitter," while McDougall is a "slumper" in the matter of classification. There are a number of instincts such as curiosity, which cannot be brought under the scheme of reflexes. These the author terms central instincts. He considers them the most significant of human motives, and therefore calls them necessary instincts. All these instincts have something in common, a nucleus which is the substance of the human will, and which the term "will power" in large part describes.

In Part Three, entitled "Conscience," the author in discussing the relation of conscience to instincts, says: "My own view is that conscience stands outside the instinctive life of man, not as some-

thing separate but as an awareness of the success or failure of that life in maintaining its status and its growth." The remainder of this part of the book is concerned chiefly with "Sin." The other parts of the book are entitled "Experience," including a chapter on the nature of pugnacity; "Society," including chapters on education and punishment; "Art and Religion;" and "Christianity."

Jastrow's book, *The Psychology of Conviction* (4), is a collection of essays, most of which have already appeared in magazines. Three of them are printed for the first time. "The Psychology of Indulgence," "The Feminine Mind," and "Militarism and Pacifism." The nature of the last essay does not call for a description here.

In the essay upon "The Psychology of Indulgence: Alcohol and Tobacco," the author takes a stand against unreasoning prohibition. Indulgence has its virtues, for there is a benefit in relaxation, change, social intercourse, etc., and the conditions under which indulgence in tobacco and alcohol can continue without harm should be studied scientifically. If indulgence leads to excess, the fault lies not in tobacco and alcohol, but in the individual. If the laws cannot control indulgence in a certain race so that the benefit remains greater than the harm, prohibition may be necessary, but the problem should be approached in a spirit of intelligence and open-mindedness, and with the knowledge that suppression may cause still greater evils.

In "The Feminine Mind," the author reviews the sex-determined differences of the masculine and feminine mind. He considers that the mind of woman is a distinct type. That tests fail to disclose marked differences is because of their inadequacy. He believes that the results of tests which show that women are as well-fitted as men for all vocations are false. Either the tests are incapable of discovering the truly significant differences, or the interpretation of the statistics is incorrect. Also the fact is overlooked that small differences may be extremely important in determining the field of activity for which the individual is best equipped.

In *The New Rationalism*, Spaulding (8) devotes a few pages to the nature of consciousness, which he defines in agreement with several other realists, as a relation. He shows that this view is compatible both with the psychological theory that specific consciousnesses are events, for "events are themselves relational complexes," and with the behaviorists' point of view, in that when

physiological conditions are related in a specific way to the stimulus, then knowing is present and the behavior can be studied under this specific relation. He enumerates several fundamental problems of consciousness, such as the extent of consciousness in the universe and the nature of illusion, the latter problem being answered according to the theory of Holt. The illusions do not only exist in consciousness, but are real parts of the world; for example, two rails can be both parallel and convergent, depending upon the total conditions. There are also a few pages on the thought process with special reference to meaning as represented by words.

Hocking, in his book *Morale and Its Enemies* (3), gives the result of keen observation of the soldier both in France and in this country. The book contains many interesting psychological facts concerning the fighting man, together with an analysis of ethical and political values. There are two parts: "Foundations of Morale," and "Morale of the Fighting Man." He explains the importance of morale and its nature, which must be gleaned in the world of experience, as the subject does not lend itself to laboratory experiments. The fundamental of morale is a state of faith, and this being so the great aims of the war must be held in the mind if morale is to be of the victorious quality. In speaking of instincts, of which the tribal instinct and pugnacity are important, he says there must be intelligent motives back of the instincts, for the army is not a mob swayed by unreasoning impulses, but a group ruled by intelligent leaders. On this ground he takes exception to much that has been written upon mob psychology in connection with the war. Several chapters deal with national morale, the Potsdam attitude, and the true nature of the state. In the "Psychology of the Soldier," he states that the soldier is always upon the front line, in that his habitual attitude is one of protecting rather than being protected. His chief characteristics should be endurance, severity and courage. The author corroborates the experience of so many who have seen our men in France, that they have learned to face the truth and reality of life, and to live their natural lives. He further explains the nature and value of discipline and drill, and of prestige for command. A number of practical hints for establishing morale are given, such as appeal to the imagination, and the influence of the community upon the soldier. There are also chapters upon the nature and control of fear, and upon the sexual question, including the value of prophylaxis in this connection.

Norsworthy and Whitley's *The Psychology of Childhood* (7) is a

textbook intended for normal schools, and presupposes a general course in psychology. The source and characteristics of original nature and of social and non-social instincts are discussed. There are also chapters upon affective states, imagination, memory, habit, learning, moral, religious, and physical development, exceptional children, methods used in child psychology, and child life at five and eleven.

W. H. Mitchell has translated Cardinal Mercier's *The Origins of Contemporary Psychology* (6), which first appeared in 1897. The author's standpoint is that of Aristotelian and scholastic philosophy. He shows at great length the influence of Cartesian philosophy. Under contemporary psychologists he refers to Spencer Fouillée, and Wundt. He also deals with positivism, mechanism, and neo-Thomism. He believes that no greater service can be rendered to scholastic psychology than by putting it in touch with results of modern science, including human, animal, and abnormal psychology, and anthropology.

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DISCUSSION

STUDIES IN HUMAN ACTION

The course of "Studies in Human Action for the S. A. T. C." as outlined by the subcommittee of the National Research Council was, I assume, something of an experiment in adapting psychological tradition to military needs. If that assumption is correct its value for future instruction will doubtless be increased by the frank criticism of those who taught it.

The S. A. T. C. at Wesleyan University was very fortunate in many respects. The military staff and the academic authorities worked in complete harmony. The morale of the unit was excellent. The continuity of work was less interrupted by the epidemic of Spanish influenza than was the case at many institutions.

The course of Studies in Human Action was given a fair trial under these favorable conditions. It was elected by 29 students, of whom 6 were civilians. A much larger number (about 80) had elected it and would have taken it save for conflicting requirements from the War Department. The class was conducted as a single section. The general plan and spirit of the recommendations sent out by the committee were closely followed. Sets of questions on the topics suggested in the outline and related themes were dictated to the students from time to time, to be used by them as their guide in preparation for the discussions. Frequent reports were required, based on readings in the literature, which included references to general texts, social psychology, various branches of applied psychology, and to articles on military psychology by psychologists, and by military and naval authorities. Special mention should be made of the courtesy and promptness of the Adjutant General's Office, the Bureau of Medicine and Surgery of the Navy Department, the Headquarters of the Port of Embarkation, Hoboken, N. J., and the Naval War College, Newport, R. I., in furnishing valuable literature otherwise inaccessible.

The results of the teaching of a course so new in its whole conception and under such conditions could not be ideal. The following paragraphs will suggest limitations which developed in the experience.

1. There was too much ground to cover in one term by the discussion method. It was found necessary from lack of time to omit entirely the section on Psychology of Observation and Report, which in any case was hardly a climax to the course. The omission was fortunate inasmuch as appetite for the purely military applications was dull after November 11. The difficulty occasioned by the overplus of material might have been remedied by dividing the theoretical nine hours devoted to the course each week into six hours of discussion and three hours of study. However none but the hardest students would have elected such a course.

2. The suggested outline involved rather too much repetition. For example, discipline and methods of influencing men were discussed under leadership and again under motivation and morale.

3. The only really serious difficulty lay in the lack of adequate literature. What was available was either too purely military (and not psychologically scientific) or else too theoretical for a course planned on the inductive basis. As a result the course was too much of a "snap" from the student point of view.

In spite of these limitations, experience at Wesleyan decidedly justified the course in the mind of the instructor. The following facts are significant.

1. The inductive method worked. While thinking for themselves about their everyday experiences—both human and military, so to speak—the men acquired half unconsciously a very considerable amount of psychological theory.

2. The method of discussion ensured interest and attention and stimulated original thinking. It is, however, to be noted that some of the best students, *i.e.*, men who in normal times were high-grade men in most subjects, did not do very well in the work. The reason for this is doubtless the fact that the course placed a premium on quick mental reactions, on thinking on one's feet, and not on mere memory.

3. Students recognized the actual military value and importance of the work. They were visibly impressed by the testimony of men like Napoleon and Foch to the significance of the mental factor in war; and the spectacle of the coöperation of the psychologists of the country in war work inspired respect for the course. The students also correlated between the work in the class room and their military duties, often citing illustrations from their experience at drill. The course undoubtedly gave them a more intelligent and enthusiastic interest in their military training.

4. The plan of the course turned out to have at least one outstanding advantage over that of the ordinary introductory course in psychology. It kept before the student the conception of the whole human mind reacting to varied situations; and thus avoided the atomistic view of consciousness almost inevitably suggested by the study of sensations, perceptions, etc., as separate topics. The course made a comprehensive and intensive application of all relevant psychological principles to the typical reactions of the soldier and officer.

5. In conclusion it may be noted that the non-military students were among the most appreciative of the value of the course. In spite of the fact that illustrations and applications were chosen predominantly from the military field, the bearing of the principles on other fields of life was recognized by these men.

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DISTRIBUTION OF EFFORT

The experiment to be described in this paper was designed to determine whether the efficiency of distributed effort is confined to certain stages in the learning process or whether this mode of acquisition is uniformly effective for all stages in the development of a habit. In a problem like the maze, it is conceivable that distribution may be very effective in the initial trials while concentrated effort may be more effective in the final stages of mastery.

A class of 20 undergraduate students of psychology was required to learn pencil maze A, a diagram of which is given in Webb's monograph on Transfer and Retroaction.¹ The class was divided at random into two groups of 10 each. The members of group A were given 10 consecutive trials on the first day, and thereafter but one trial per day for 10 days. Members of group B were first given one trial per day for 10 days and 10 consecutive trials on the eleventh day. One group thus concentrated their effort for the first 10 trials and distributed it for the second 10 trials. This procedure was reversed for group B. Distribution obtained for the first period and concentration for the second. A comparison of the graphical records of the two groups will thus reveal the relative efficiency of the two modes of procedure during the initial 10 trials as contrasted with their effectiveness for the eleventh to the twentieth trials.

¹ Webb, "Transfer of Training and Retroaction," *Psychol. Rev. Mon. Sup.*, Vol. 24.

The average error records for the two groups are given in Fig. 1. Time records were taken but it is hardly necessary to publish them. The following results were obtained from the experiment:

Eight of the twenty subjects mastered the maze on the basis of a criterion of four perfect trials out of five. Of these six were members of group B whose initial 10 trials were distributed. This fact indicates that distribution in the early trials is more effective than in the later stages.

During the initial trials group A made 1126 errors to 784 for group B, a ratio of 1.43 to 1. Concentrated effort thus increased the number of errors by 43 per cent. In the final 10 trials, distri-

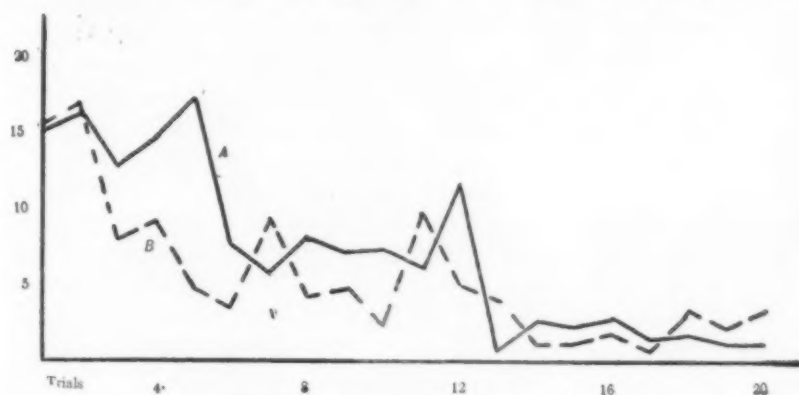


FIG. 1. Distribution of Effort

bution obtained for group A and it made 319 errors to 327 for group B, a ratio of .98 to 1. The difference is too small to be significant but it favors the group with distributed trials.

The graphs remain at the same level for the first two trials. The curve for distributed effort then falls the faster and remains below the level of that for concentrated effort up to the 10th trial. In the second period the two graphs do not materially differ.

There is no apparent difference in the height or course of the two time graphs (not published) at any stage of learning. Group A spent a total of 118.54 min. for the first 10 trials, and 41.16 min. for the final 10. The corresponding values for group B are 123.25 min. and 49.80 min. respectively. Group A thus made the better time records when their trials were concentrated as well as when they were distributed.

We may thus conclude that for the maze problem the effective-

ness of distribution of trials is limited in the main to the initial period of rapid error elimination. For our problem the maximum effectiveness was evident during the period from the second to the sixth trials. For the remaining periods the results do not allow of any assertions as to the relative effectiveness of the two methods. From the data the two methods seem equally effective upon the time values.

The above conclusion receives some confirmation from Ulrich's study of distribution¹ in which he used white rats with a circular maze. One group received 5 trials per day, another 3 trials per day, and a third but 1 trial per day. Comparing the records of the two extreme cases of 5 and 1 trial per day, the two graphs remain at the same level for the first two trials, the curve for the group with the greater distribution then falls the more rapidly and remains at the lower level up to the ninth trial, the curve for the 5 trials per day group then falls the more rapidly for the ninth to the eleventh trial, and thereafter the two graphs maintain the same relative position in reference to each other. The greater efficiency of distributed effort is again limited to the initial period of rapid progress from the second to the ninth trial. Three trials per day was more effective than five, and this greater effectiveness was confined to the period from the second to the fifth trial. Apparently distribution is mainly effective during the initial period of rapid elimination.

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CHARACTER AND HANDWRITING

A recent report by Hull and Montgomery on the testing of certain graphological assumptions by correlation of rankings obtained by (1) objective measurements of chosen graphic elements and (2) character-ratings based on traits of which the chosen graphic element is supposed to be symptomatic leads me to report a summary of a similar investigation, a complete account of which will appear in a forthcoming book on *Graphology and the Psychology of Handwriting*.

The method utilized in the two experiments was somewhat similar although my procedure and material was less standardized. The latter consisted of thirty autograph letters from well-known

¹ULRICH, "The Distribution of Effort in Learning in the White Rat," *Behav. Mon.*, 2, p. 20.

psychologists; the measurements on the chosen graphic elements were made by myself; the character-ratings were kindly furnished me by a dozen eminent psychologists. A tabular summary of my results follows:

CORRELATIONS OF CHARACTER WITH HANDWRITING

| | |
|--|-------------------|
| Feeling of Self-Worth (Pride) with Size and Emphasis of Capital..... | +.24 (P.E., .12) |
| Aggressiveness with Line-Quality (Pressurè)..... | +.23 (P.E., .13) |
| Preoccupation with Details with small filiform writing..... | +.61 (P.E., .082) |
| Temperament with variations in Slant and Alignment..... | +.27 (P.E., .12) |
| Explosive-Inhibited Make-up with graphic complex..... | +.53 (P.E., .10) |

A detailed comparison of my results with those of Hull and Montgomery will prove of interest. In both instances, "Pride" was a trait of character chosen for study, but in the one investigation it was correlated with "upward sloping lines" and in the other with "Size and Emphasis of Capitals." Both result in inconclusive figures. Again, both investigations measured the slope of the line, but in one case it is taken as symptomatic of ambition or pride and in the other (with slant) of optimistic-pessimistic make-up. Again, our results are inconclusive. Both experiments sought to determine the extent of correlation of force (aggressiveness) with heavy writing (pressure). Again, with inconclusive results.

The fact that the two investigations choose in one case the same character-trait but utilized a different graphic sign as an index to it, and in another case choose the same graphic element as indicative of different character-traits may serve as an illustration of the difficulty encountered in any attempt to test graphological assumptions in a scientific way. In justice to the graphologists it must, however, be recalled that they list, often, a multiplicity of causes for the same effect, and diverse results from the same cause, and that they insist that a given graphic detail can be properly interpreted only as one element in the whole graphic complex. The proper weighting of graphic symptoms in a "graphological diagnosis" would seem to demand extensive experience and art!

But that it is no mere evasion to cite a number of causes as capable of producing the same graphic effect is shown by the outcome of various psychological experiments which cannot be canvassed here. Size and alignment are especially variable elements and subject to modification by a number of external conditions, not to mention subjective ones. The principal mechanical factor

involved in alignment is that of pivotage of movement (Osborn). That variation in emotional condition may, however, have some effect upon alignment is shown by observations reported elsewhere in which a comparison is made upon the chirography of the *same individual under different conditions*. The graphological explanation of the significance of alignment is that it is one instance of emotional mimicry. Upward-sloping movement is a centrifugal gesture, symptomatic of expansive emotions; down-sloping movement centripetal, indicative of withdrawal, retreat. But even though one had conclusive evidence of shifts in alignment (and size) in the writing of a given individual under defined conditions, it is difficult to see how to effect a transition from intra-individual to inter-individual interpretation.

A glance at my table will show that in at least two instances I obtained really significant correlational coefficients. My highest coefficient (+.61) is obtained in the one case in which I used an aspect of intelligence as a basis for the judgment. Binet's report, as cited by Hull and Montgomery, shows a greater degree of success with graphologists when their ability to read intelligence from writing is put to the test than results when they occupy themselves with character or morality. One might, not unreasonably, expect the reverse conditions to hold. But undoubtedly our character-concepts are very vague, and loosely analyzed notions. I have been particularly impressed with this fact in a recent investigation where I have sought to obtain judgments on such traits as aggressiveness and pride. Quite possibly casual judgments on character are quite as ambiguous as graphological symptoms.

In any case one cannot ignore complications of character by intelligence, or the reverse. For instance, a hyperkinetic constitution conjoined with high intelligence might make one famous; the same constitution with low intelligence, infamous. The temperamental factor which in one case enforces intelligence, in the other undermines morality. How many of Binet's geniuses and notorious criminals alike possessed an explosive make-up? It would be immensely interesting to examine his documents with this query in mind.

Whatever might be the issue of such an examination, my figures seem to suggest a significant index for the correlation of explosive-inhibited make-up with the graphic complex. Personally, I believe that this point of attack is most promising. From this point of view I find Klages' work *Die Probleme der Graphologie*,

the most suggestive of all books on graphology with which I am acquainted, although it is less well known than many others. It does not lend itself readily to schematization but suggests instead many possible fields of exploration.

Certainly I do not think we are quite ready yet to dismiss graphological diagnosis as leaking at all points, although, possibly, handwriting will be a lost art before scientific acumen will have succeeded in penetrating its secrets.

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NOTES AND NEWS

THE December number of the BULLETIN, dealing with race and individual psychology, was prepared under the editorial direction of Professor R. S. Woodworth, of Columbia University.

AT the Baltimore meeting of the American Psychological Association the following officers were elected: President, W. D. Scott; Members of the Council, 1919-1921, B. T. Baldwin and L. M. Terman. The time and place of the next meeting were left to the council's decision.

THE publication of the cartoon issued with the present number of the BULLETIN has been made possible because of the courtesy of Maj. G. F. Arps, S.C., U. S. A., who furnished the original sketch, and to permission for reproduction from the office of the Surgeon General, U. S. A., and from the publishers of the *Camp Sherman News*, in which the cartoon originally appeared. A few copies have been printed on larger sheets, suitable for framing, and these may be obtained for fifty cents each from the Psychological Review Company, Princeton, N. J.

